A meeting of the Sub-Committee was held on Friday 21 February 2013.

Present: Mr S Cross (Convener), Dr J Blicharski, Dr M Frame, Dr N Hine, Ms E Kerr, Mrs N Lafferty, Dr A Mason, Mr D McGlade (DUSA), Dr A McGuigan, Dr E Monk, Dr D Moyo, Dr S Schofield, Dr L Walsh, Mrs J Warden-Fernandez.

Apologies: Ms J Aitken, Mrs L Martindale, Dr L Morris, Dr D Sloan.

In Attendance: Dr M Glover.

1. MINUTES

The Sub-Committee decided: to approve the minutes of the meeting of 9th November 2012.

2. MATTERS ARISING

Minute 5 (AOB): The Sub-Committee noted that timetabling and teaching room AV/IT support issues continued to be a focus of some dissatisfaction, particularly for students.

3. REVISED STRATEGIC AIDS & OBJECTIVES

The Sub-Committee received a revised version of the strategy document that included feedback from the e-learning forum meeting in December. The Sub-Committee noted that the revisions amounted to a change of emphasis rather than fundamental changes.

The Sub-Committee expressed a very strong view that the focus now needed to move to delivery and implementation and instructed that the Learning & Teaching Committee now be asked to formally endorse the strategy and to support implementation as a matter of priority.

The Sub-Committee decided: to invite the Learning & Teaching Committee to endorse the Technology Enhanced Learning Strategy and to support its implementation in the current round of operational planning by Schools and Directorates.
4. STANDING ITEMS

(i) Library & Learning Centre (Educational Development)

The Sub-Committee received a report from the Assistant Director of the Library & Learning Centre (Educational Development).

The Assistant Director reminded the Sub-Committee about the e-Learning symposium to be held on 31st May and the call for papers that was open until 29th March. The Assistant Director asked that members promote the Symposium and circulate details in their respective Schools.

The Assistant Director asked the Sub-Committee to recall discussions at previous meetings regarding the policy on recording of lectures. The Assistant Director commended a paper on this topic written by a Dutch team (Appendix A). This concluded that students typically listen more and wrote less at recorded lectures, were more, not less, likely to attend these recorded sessions and saw them as adding value to, rather than replacing, the traditional lecture format.

The Assistant Director indicated that a report on the pilot activities around Exam on Line would be ready for the next meeting of the Sub-Committee. LLC testing of QMP was completed and work continuing with ICS towards upgrade and roll-out as scheduled. It was also reported that discussions had begun, with the Employability Committee and others, on replacing the current Personal Development Planning (PDP) with a more interactive solution.

The Sub-Committee was then asked to support immediate implementation of the following required improvements to the University’s learning & teaching technical infrastructure.

(i) **Turnitin.** This involves implementing Turnitin, a market-leading solution that offers more functionality – including grading, feedback and peer review support. This system was evaluated by LLC in 2011 and has now been included in LLC operational plans and in School plans where appropriate.

(ii) **Media Streaming** (Appendix B). A timeline for the proposed project and pilot has been produced with the emphasis on sustainability (after initial investment).

The Sub-Committee noted that both projects will need considerable, but not overwhelming, investment and resources to succeed. However, the Sub-Committee also noted, with concern, that failure to improve in these areas carried considerable risk to the quality of the student experience and to the integrity of academic standards.
The Sub-Committee expressed concern that failure to act decisively now would see the University fall even further behind in core areas where it wanted, and needed, to be leading - in order to meet its own aspirations and the reasonable expectations of its students.

**The Sub-Committee decided:**

1. to recommend immediate implementation of the Turnitin and Media Streaming Projects;

2. to otherwise note the report.

(ii) Information and Communication Services

The Sub-Committee received a report from the Acting Director - Information and Communication Services.

The Sub-Committee was asked to note that work was underway to match the operational plan of ICS with the developing plans of the Schools and Directorates. The main priorities for ICS are emerging as part of this process:

- Upgrading of teaching facilities (AV/IT)
- Information management
- WIFI across campus – including residences
- Rationalisation of web provision
- Extending Storage Capabilities
- Helpdesk support via Apps.

The Sub-Committee expressed a strong view that WIFI in the residences was a reasonable student expectation although the costs involved were not insignificant.

The Sub-Committee also discussed investment in smartboard technology in central teaching rooms as an example where student expectations, teaching staff priorities and operational planning are not coinciding as they should. The Sub-Committee noted that teaching room improvement activities were often focused mainly on décor and furnishings rather than on improvements in learning and teaching technology and suggested that the two areas should be clearly separated in central budgets and planning.

**The Sub-Committee decided:**

- to note the report.

4. **E-LEARNING FORUM DECEMBER 2012**
The Convener reported that the E-Learning Forum meeting in December was well attended and that the next meeting would be arranged for the third week in March 2013 with an emphasis on the implementation of the strategic aims and objectives.

The Sub-Committee decided: to note the newsletter report of the Forum held in December 2012 (Appendix C).

5. AOB

E-Learning web pages, blog and sharepoint site.

It was noted that some rationalization and co-ordination of the e-learning resources on the web was needed now that the e-learning blog had been reactivated.

The Sub-Committee decided: to ask the Convener and the Sub-Committee Secretary to co-ordinate and report back.

6. Dates of Next Meetings

e-Learning Forum March 2013 – details to follow
e-Learning Sub-committee 10th May 2013 at 2pm. RR3

Mr Stuart Cross
Convener

Appendices

Appendix A Students and recorded lectures: survey on current use and demands for higher education (Gorissen, van Bruggen and Jochems in Research in Learning Technology Vol. 20, 2012)

Appendix B Media Streaming Project Proposal

Online recordings of lectures provide students with anytime-anyplace access to lectures. Research shows that students prefer courses accompanied by online recordings and an increasing number of universities provide recorded lectures. This paper presents the results of a study into the use of recorded lectures at two universities in the Netherlands. The goal of the study is to gain a better understanding of the way that this group of students use recorded lectures. This understanding will enable the creation of usage scenarios that need to be supported. Our results show that students use recorded lectures as a replacement for missed lectures and for study tasks, like preparing for an exam. A large proportion of the students report that they watch 75–100% of a recorded lecture when they view one. The fact that students did not mention the quality of the actual lectures appears not to influence the use of the recorded lectures. Recorded lectures for courses that only use the blackboard are viewed less often. There are also interesting differences in the use of recorded lectures of the different groups of students at the two universities. To increase the credibility and validity of the results, we need a more direct way to measure the use of recorded lectures by students. Methodological triangulation using the log data for the recorded lectures can provide this.

Keywords: recorded lectures; web lectures; online lectures; video lectures

Introduction

The lecture is the most common form of teaching method in institutions of higher education throughout the world (Behr 1988). Its prevalence has been criticised by many (Phillips 2005; Sheely 2006), yet this criticism has not lead to significant changes in the form or frequency of use of lectures. An increasing number of universities choose to support student learning by providing online recordings of lectures (Leoni and Lichti 2009). These recorded lectures provide students with more control over their schedules and learning, allowing them to review lectures at their own pace and at a time and place of their choosing. Thus, recordings offer a more learner-centered approach for lectures (Baecker, Moore, and Zijdemans 2003; Traphagan, Kucsera, and Kishi 2010).
Research by Traphagan (2005, 2006), Veeramani and Bradly (2008) and Gosper et al. (2008) shows that most students express a preference for courses accompanied by online recordings of the lectures. This is not only the case for traditional distance students, but also for on-campus students as well (Woo et al. 2008). Chang (2007) examined teacher and staff perception towards lecture recordings and results show they favour the use of recorded lectures as well. Little is known, however, about the way in which students navigate within the recordings or how they find (the parts of) the recordings they want to watch. Most studies are limited to the overall opinions and perceptions of students and lecturers about usefulness of the recorded lectures.

This article reports on a study into the use of recorded lectures by students at two universities in the Netherlands. The study looks only at full length recorded lectures of live lectures, the most frequently type of recordings created at both universities, consisting of recordings of 40–45 minutes lectures. This study is part of a larger research project into the use of recorded lectures by students that aims to improve the support for recorded lectures by students within different usage scenarios.

In this stage of the larger body of our research, we asked students directly about their usage of recorded lectures. In the next stage, we will explore means to measure their use of the recorded lectures and the way in which they navigate through the recorded lectures. The goal of this first stage of the research is to get a better understanding of the way this group of students use recorded lectures. This will enable us to create student usage scenarios that need to be supported. In this article, we want to address the following questions: Where and when do students watch the recorded lectures? With what purpose do they watch? If they did not watch the recorded lectures, for what reason did they not watch? Is there a relationship between the use of recorded lectures and the level of ambition of students, the ease of use of the recorded lectures, or the use of other resources available to the student?

This study goes beyond the existing body of research by applying a sampling method that is different from other studies. We specifically selected students with recent exposure to recorded lectures and surveyed them about their use within a single specific course. Both users of the recorded lectures and non-users were included in the study. The subjects were all on-campus students who were able to attend the face-to-face lectures. And although the results are reported anonymously, the survey data allows us to compare the results of this first stage with the results of the second stage of the research. This means we will be able to compare the reported use of the recorded lectures with the actual use of the recorded lectures.

Lecture capturing
There are a number of ways in which video can enhance lectures. Weblectures are video recordings that have been specifically made for use as educational resources (Day 2008). They consist of a studio recording containing a combination of video and audio with a synchronized view of the lecturer’s computer screen while displaying a presentation. Weblectures usually do not exceed 20 minutes. A variation on the weblecture is the screencast (Udell 2004). There the focus is on what happens on the screen, for example, to explain the usage of a computer application. Screencasts can contain video of the presenter, but usually only contain the audio and a recording of the screen. Because weblectures and screencasts are recorded in advance and in a controllable setting, their quality level can be reasonably high. The story they tell can
be scripted in advance, re-takes of the recording are possible and they can be made available to students in advance of the actual lecture.

Lecture capturing involves the capturing of a live lecture situation. The lecture dictates the length, contents and structure. Early lecture-capturing systems often did not include video of the lecturer. One reason for this was that previously the speed of internet connections available to students required high video compression, low frame rates and small frame size (Fardon 2003). One way used to solve bandwidth problems was to create downloadable podcasts that contained audio only or audio and video (Belanger 2005; Campbell 2005; Chan, Lee, and McLoughlin 2006).

In the conversational framework, Laurillard (2002) uses the concept of “affordances” (Gibson 1979) of multimedia to match them with learning activities. Modern lecture capture systems have a number of additional affordances when compared to more traditional media like a DVD, videocassette or even television broadcasts. Students have direct, on demand or live, access to the recorded lectures. They can play, pause and replay parts of the recorded lecture as often as they like. They can also annotate the recorded lectures, either directly in the interface provided by the lecture capture system, or by saving links (favourites) to parts of the recorded lecture.

Most universities in the Netherlands use commercially available systems to capture lectures; some have home-grown solutions. Both universities that participated in this research study use a lecture capturing system (LCS) called Mediasite by SonicFoundry (Sonicfoundry 2010). All recordings are available online only; currently, no downloadable versions of the recordings are provided by either of the two universities.

The LCS used in this study consists of a combination of hardware and software. It captures a number of different media at once. An external video camera captures the video of the lecturer. The audio, captured through the lecturer’s wireless microphone, is recorded and relayed to the system. Finally, the VGA signal, normally sent directly to the projector, is rerouted through the lecture-capturing system, where it is recorded along with the audio and video of the presenter. The LCS automatically adjusts the recording and synchronisation of the recorded audio, the video and the VGA signal. When the recording is complete, it is automatically uploaded to a server and made available for students. Students’ notes are not recorded by the system. Students either use paper and pen to create notes or use their laptops to type notes during the lecture.

The user interface consists of a three-window display (Figure 1): one featuring the video of the instructor (1), one showing the captured VGA signal as displayed on the projector (2) and one showing general information about the recording (3). Students can move the video play to a specific time in the lecture and play the presentation at faster or slower speeds, as needed. They also can switch to a slide-based view (not shown in the figure). This view shows captures of the slides, generated by the capturing system, that allow direct navigation to certain parts of the lecture.

The study

Participants

Participants were students at either the School of Nursing at Fontys University of Applied Sciences in the Netherlands, or from various faculties of the Eindhoven
University of Technology (TU/e). Student selection was based on their recent participation in a course that used recorded lectures (second half of 2009). The courses all had a set of lectures that were recorded on a regular basis (weekly or more often). Students were questioned about one specific course in order to keep the overlap between subgroups as small as possible. The students were provided with online recordings of lectures that they could also attend in person. This meant they had the choice between either attending the lecture, viewing it online, or both.

For the Fontys students, these criteria limited the number of available students to 203 students participating in a single course. For TU/e, students were selected from three courses with a large number of views and three courses with a small number of views. The six courses had minimal overlap: Only eight students had registered for more than one of the six courses selected for this study. This selection method led to a total group of 919 students for all six TU/e courses. Most Fontys students in the participant group were female (81.3%) while most TU/e students in the participant group were male (84.7%).

Table 1 shows the seven courses that were included in the survey. The courses were part of six different departments; both the C05 Vector calculus and the C06 Calculus course were conducted by the Applied Mathematics department. The Fontys course was aimed at first year students of the School of Nursing, while the TU/e courses were aimed at both third, second and first year students from different programs of TU/e. 83.5% of the Fontys respondents and 20.0% of the TU/e respondents are female, resulting in a slight overrepresentation of females in the responses.

Most of the recordings are traditional university-style lectures, with the teacher standing in front of the class lecturing. Exceptions to this were lectures where assignments and the test were discussed.

All recordings are between 35–45 minutes long. In all of the recordings, video of the lecturer is recorded and displayed. Five of the courses used PowerPoint or other computer-based applications recorded alongside the video of the lecturer, as shown...
Table 1. Courses selected for the survey and response rates.

<table>
<thead>
<tr>
<th>Course</th>
<th>Department</th>
<th>( N )</th>
<th>( n )</th>
<th>(%)</th>
<th>PowerPoint</th>
<th>Blackboard</th>
<th>#(^{a})</th>
</tr>
</thead>
<tbody>
<tr>
<td>TU/e</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C01 Methods and models in behavioural research</td>
<td>Industrial Engineering &amp; Innovation Sciences</td>
<td>307</td>
<td>144</td>
<td>45.6</td>
<td>Yes(^{b})</td>
<td>Yes(^{c})</td>
<td>35</td>
</tr>
<tr>
<td>C02 Control Systems Technology</td>
<td>Mechanical Engineering</td>
<td>190</td>
<td>72</td>
<td>34.7</td>
<td>Yes(^{d})</td>
<td>Yes</td>
<td>20</td>
</tr>
<tr>
<td>C03 Chemical Biology</td>
<td>Biomedical Engineering</td>
<td>136</td>
<td>68</td>
<td>49.3</td>
<td>Yes</td>
<td>Yes</td>
<td>27</td>
</tr>
<tr>
<td>C04 Facades and Roofs</td>
<td>Architecture, Building and Planning</td>
<td>115</td>
<td>40</td>
<td>33.9</td>
<td>Yes</td>
<td>No</td>
<td>15</td>
</tr>
<tr>
<td>C05 Vector calculus</td>
<td>Applied Mathematics</td>
<td>94</td>
<td>47</td>
<td>48.9</td>
<td>No</td>
<td>Yes</td>
<td>14</td>
</tr>
<tr>
<td>C06 Calculus</td>
<td>Applied Mathematics</td>
<td>77</td>
<td>43</td>
<td>55.8</td>
<td>No</td>
<td>Yes</td>
<td>35</td>
</tr>
<tr>
<td>Fontys</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C07 Anatomy &amp; Physiology</td>
<td>Nursing</td>
<td>203</td>
<td>103</td>
<td>47.8</td>
<td>Yes</td>
<td>No</td>
<td>28</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>1,122</td>
<td>517</td>
<td>46.1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^{a}\)Number of recordings for this course.

\(^{b}\)Both PowerPoint and demos of applications.

\(^{c}\)For additional notes, during 5 recordings.

\(^{d}\)During 8 of the 20 recordings.
in Figure 1. Two of the courses only used the blackboard during the lectures. In these cases, the same camera was used to record both the lecturer and the blackboard. The interface, as shown in Figure 1, displays a static image as part of window (2) that otherwise would display the captured VGA signal.

Materials and procedures
During this stage of the research, the study consisted of two parts: an online survey and a number of semi-structured interviews. The online survey contained 17 questions using both multiple choice and Likert scale questions. Some of the questions are based on questions used in other surveys on the use of recorded lectures (Hall 2009; Kishi and Traphagan 2007; Traphagan 2006; Veeramani and Bradly 2008; Wieling 2008; Williams and Fardon 2007; Zupancic 2006). Students were able to complete the survey in about 10–15 minutes.

The first part of the survey asked students for their interest in the topic of the course, the perceived importance of the course for their course of study and the grade they wished to achieve for the course. In the second part of the survey, students rated the effectiveness of a number of available activities (e.g., attending face-to-face lectures) and supporting resources (e.g., slides, lecture notes, etc.) in helping them to succeed in the course. It also asked about any previous experience with lecture recordings, and whether they had used the recorded lectures for the course in question. In part three of the survey, those students who had used the lecture recordings were surveyed in more detail about their experiences during that use. Those questions were not displayed to students that indicated they had not used the recorded lectures. The final part of the survey contained questions for all students, seeking out reasons they did not watch one or more of the recorded lectures (if applicable). We reviewed the survey and tested it online with a number of peers and experts.

We approached the students using a personalized e-mail that contained the link to the web-based survey. In the e-mail and the survey itself, the students were reminded to complete the survey based on their experiences and use for the one specific course mentioned. The survey was open online for 2 weeks. An e-mail reminder was sent after 1 week and again on the final day of the survey to those students who had not completed the survey.

All questions in the survey and informational e-mails were provided in both Dutch and English because some of the international students at TU/e prefer English over Dutch. Students could switch between the Dutch and English versions while filling out the survey. As part of the survey, we invited students for follow-up questions. A total of 120 students accepted the invitation initially. Of those students, 14 were interviewed using a semi-structured interview lasting 30 minutes. During the interviews, students were asked to elaborate on their use of the recordings during the course. The interviews were recorded and transcribed.

Results
The total response rate for the survey was 517 (46.1%, N = 1122). Nineteen partially completed surveys were included in the results. The survey contained a number of questions that were displayed only when the student had indicated that he or she had watched the recordings. Because of this, not all students completed all the questions,
and the number of responses may differ between questions. Where relevant in this article, the actual number of responses (n) is indicated in the remainder of the results section.

Most students participating in the survey had a positive attitude towards the course in question. Of all respondents, 74.2% felt that the topic of the course was important, and 83.9% agreed that the course was an important part of their study. Students were asked about their level of ambition for this course. TU/e students, on average, aim for a 7.35 on a 10-point scale (SE = 0.97) on the exam. The mean for Fontys students is 4.18 on a 5-point scale (SE = 0.789). Students are motivated for the course and see it as an important part of their study.

Table 2 shows the number of times respondents indicated they used recorded lectures for the course. When compared to the TU/e, there were more heavy users amongst the Fontys respondents. However, these respondents, who might have a more positive attitude towards the recordings, were not overrepresented in the total responses for the survey.

A Chi-square test for interdependence indicated a significant association between the course and the number of times respondents used the recorded lectures, $\chi^2 (18, n = 513) = 183.280, p < 0.0005$, Cramer’s $V = 0.345$. There also is a significant association between what is recorded (PowerPoint, blackboard, or both PowerPoint and the blackboard) and the number of times respondents used the recorded lectures, $\chi^2 (6, n = 513) = 86.937, p < 0.0005$, Cramer’s $V = 0.291$. Of all students from the courses where only the blackboard was recorded, 48.9% never used the recorded lectures and 36.7% used the recorded lectures less than five times. A Chi-square test for interdependence showed no statistically significant difference in the number of times that students used the recorded lectures and their reported interest in the topic of the course, $\chi^2 (12, n = 513) = 17.099, p = 0.146$, or the indicated importance of the course for their course of study, $\chi^2 (9, n = 513) = 15.593, p = 0.174$. There also was no statistically significant difference in the grade that students wished to achieve and the number of times that students used the recorded lectures, $\chi^2 (9, n = 513) = 4.525, p = 0.874$.

Table 3 shows that there was a significant difference between TU/e and Fontys students with regard to prior experience with recorded lectures. Of the students who had used recorded lectures for their course five times or more, 65.3% had prior experience with recorded lectures. Of the students who did not use recorded lectures, 53.4% had no prior experience with recorded lectures. Spearman’s Rank Order correlation analysis shows a weak positive relationship for the TU/e students between prior experience with recorded lectures and the number of times that students used the recorded lectures ($r_s = 0.266, n = 410, p < 0.0005$).

Table 2. Number of times respondents used recorded lectures for the course.

<table>
<thead>
<tr>
<th></th>
<th>Fontys</th>
<th></th>
<th>TU/e</th>
<th></th>
<th>Total</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>(%)</td>
<td>n</td>
<td>(%)</td>
<td>n</td>
<td>(%)</td>
</tr>
<tr>
<td>Never</td>
<td>7</td>
<td>6.8</td>
<td>111</td>
<td>27.1</td>
<td>118</td>
<td>23.0</td>
</tr>
<tr>
<td>&lt;5 times</td>
<td>13</td>
<td>12.6</td>
<td>97</td>
<td>23.7</td>
<td>110</td>
<td>21.4</td>
</tr>
<tr>
<td>5-10 times</td>
<td>35</td>
<td>34.0</td>
<td>111</td>
<td>27.1</td>
<td>146</td>
<td>28.5</td>
</tr>
<tr>
<td>&gt;10 times</td>
<td>48</td>
<td>46.6</td>
<td>91</td>
<td>22.2</td>
<td>139</td>
<td>27.1</td>
</tr>
</tbody>
</table>
correlation analysis shows no statically relevant relationship for the Fontys students ($r_s = -0.067$, $n = 103$, $p = 0.504$).

Where and when do students watch the recorded lectures?

Almost all students (Fontys: 99.0%, $n = 96$; TU/e: 90.3%, $n = 299$) access the recorded lectures from home. Some students used the “other” option to indicate that they access the recordings from both home and the university. 44.9% indicated that there had been no technical difficulties at all while viewing the recorded lectures. Table 5 gives an overview of the reported technical difficulties.

Bandwidth should no longer be a problem in the Netherlands where 89% of the households have internet access at home and 79% have broadband connections (TNS Opinion & Social 2010). Yet, about 90% of all reports of technical difficulties in Table 4 were from students that viewed the recorded lectures from home, suggesting that either bandwidth problems or problems with the computer configuration at home still might be a bigger issue than on the university campus.

Only 36.4% (Fontys: 36.9%, $n = 103$; TU/e: 36.2%, $n = 414$) of students surveyed watch the recordings on the same day or during the same week as the lecture. A large number of students indicate that they use the lecture recordings while preparing for exams at the end of the course. This is supported by their responses on questions related to the purpose for watching recorded lectures.

One student, who participated in the Methods and models in behavioural research course, commented during the interview:

For an exam that I really wanted to pass, I started watching the recorded lectures again, a couple of days before the exam. I would watch for 20 minutes, take a short break and then watch for another 20 minutes. That way I could watch about 10 recordings on a single day. (IVR4)

With what purpose do students watch?

We asked students how important different purposes of recorded lectures were to them. Table 5 shows that making up for a missed lecture and preparing for the exam were the most important.

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Fontys ($n = 103$) (%)</th>
<th>TU/e ($n = 166$) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>There were no technical difficulties</td>
<td>61.1</td>
<td>40.1</td>
</tr>
<tr>
<td>Bad quality/ intelligibility of the audio</td>
<td>10.7</td>
<td>9.7</td>
</tr>
<tr>
<td>Bad video quality</td>
<td>2.9</td>
<td>12.6</td>
</tr>
<tr>
<td>Slides and video do not play synchronous</td>
<td>3.9</td>
<td>10.1</td>
</tr>
<tr>
<td>Loading the presentation takes a long time</td>
<td>5.8</td>
<td>3.1</td>
</tr>
<tr>
<td>The playback of the presentation stops to buffer/load</td>
<td>5.8</td>
<td>7.5</td>
</tr>
<tr>
<td>Presentation doesn’t play at all</td>
<td>3.9</td>
<td>1.9</td>
</tr>
</tbody>
</table>

Table 3. Ever used recorded lectures before.

<table>
<thead>
<tr>
<th></th>
<th>Fontys ($n = 103$) (%)</th>
<th>TU/e ($n = 410$) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>25.2</td>
<td>71.7</td>
</tr>
<tr>
<td>No</td>
<td>74.8</td>
<td>28.3</td>
</tr>
</tbody>
</table>

Table 4. Reported technical difficulties.
score high for both TU/e and Fontys students. The table also shows a number of differences between the TU/e and Fontys students. Fontys students rate the importance of recorded lectures to manage distractions during lectures, to check their own notes, to reinforce the experiences at the live lecture, and to review the material before a lecture about twice as often as “somewhat important” or “very important”. One possible explanation for the differences found is that the Fontys students were first-year students, less used to structuring their own learning than the mostly second and third year students in the TU/e group. Differences in individual courses, the way the lecturer presented or the topic of the course could also account for the differences in responses.

The use of the recorded lectures to overcome language barriers, as suggested by previous research (Schok 2007), was not confirmed by this survey.

During the interviews, students said that the recorded lectures enabled them to organize their schedule:

I am an active student, have a number of other activities and obligations. This means I am not always able to attend the live lectures. […] Lectures are sometimes noisy and the recordings enable me to view them without distraction, even the night before the test. (IVR14)

Reasons for not attending the lectures were other obligations, other lectures even, incorrect planning on my part or overlap in the lectures scheduled by the university. (IVR3)

This course was scheduled on a Monday morning. It was my only course on that day so I only attended the live lecture once and watched the rest online. (IVR2)

### How often and how much do students watch recorded lectures?

Fontys has a higher percentage of students than the TU/e that indicated they had used the recordings more than 10 times (see Table 2). Table 6 shows that they also have more students that report that watch most of the recordings. When asked how much of a recording they watch, 68.5% of respondents (Fontys: 73.4%, n = 94; TU/e: 67.0%, n = 297) say they typically watch at least three quarters of the recording.
During the interviews, students confirmed that they usually view the complete recording:

I watch the whole recordings, I do not skip parts. Though while preparing for the exams I only watch the parts that I think I need to watch again. (IVR2)

During the three weeks before the exams, I watched more than half of all the recorded lectures [for the course] completely and created additional notes based on that. (IVR6)

If I have not attended the lecture, I watch the recording from start to finish. (IVR7)

I start the recording and watch it once from start to finish. (IVR8)

**Reasons not to watch recorded lectures**

Only a small number of students did not watch a recorded lecture because they didn’t know that they were available. Table 7 shows the reasons selected by students for not watching one or more of the recordings. The most important reason cited for not watching a recorded lecture is because they already had been to the live lecture.

A number of students (2.1% overall) used the “other reasons” option to indicate they watched all the available recordings. During the interview phase, one of the students from the Chemical Biology course stated:

I never watch the recorded lectures if I’ve already attended the lecture. But I had to retake the exam for the […] course this year, and instead of going to the lectures, I only reviewed the recorded lectures for that course to prepare for the exam. (IVR3)

**Relationship between ease of use and student use**

Only a small number of respondents (Fontys: 6.8%, n = 103 and TU/e: 6.3%, n = 414) chose technical difficulties as a reason for not watching a recorded lecture. A Spearman’s Rank Order correlation analysis shows a weak positive relationship

---

Table 6. Average percentage of a recording viewed.

<table>
<thead>
<tr>
<th>Percentage Viewed</th>
<th>Fontys (n=94) (%)</th>
<th>TU/e (n=297) (%)</th>
<th>Total (n=391) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–10%</td>
<td>2.1</td>
<td>4.4</td>
<td>3.8</td>
</tr>
<tr>
<td>10–25%</td>
<td>1.1</td>
<td>3.0</td>
<td>2.6</td>
</tr>
<tr>
<td>25–50%</td>
<td>4.3</td>
<td>6.4</td>
<td>5.9</td>
</tr>
<tr>
<td>50–75%</td>
<td>19.1</td>
<td>19.2</td>
<td>19.2</td>
</tr>
<tr>
<td>75–100%</td>
<td>73.4</td>
<td>67.0</td>
<td>68.5</td>
</tr>
</tbody>
</table>

Table 7. Reasons to not watch one or more of the recordings.

<table>
<thead>
<tr>
<th>Reason</th>
<th>Fontys (n=103) (%)</th>
<th>TU/e (n=414) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Because I did not know that they were available</td>
<td>3.9</td>
<td>7.2</td>
</tr>
<tr>
<td>Because I did go to class</td>
<td>43.7</td>
<td>57.0</td>
</tr>
<tr>
<td>Because of technical difficulties</td>
<td>6.8</td>
<td>6.3</td>
</tr>
<tr>
<td>Because I never felt I missed anything important</td>
<td>10.7</td>
<td>21.7</td>
</tr>
<tr>
<td>Because I did not have time for it</td>
<td>26.2</td>
<td>19.3</td>
</tr>
<tr>
<td>Because I do not like to watch them</td>
<td>1.0</td>
<td>5.1</td>
</tr>
<tr>
<td>Because the quality of the recordings was bad</td>
<td>0.0</td>
<td>6.5</td>
</tr>
</tbody>
</table>
between students that rate the ease of navigation higher and the use of lecture recordings \( (r_s = 0.295, n = 384, p < 0.0005) \). Furthermore, a weak positive correlation was found between students that rate the ease of finding specific parts of the recording they want to watch higher and the use of lecture recordings \( (r_s = 0.270, n = 384, p < 0.0005) \). Students like both the possibility to pause/stop the video while taking notes and to replay the recorded lecture at high speed when reviewing the recorded lecture:

The advantage of the recording is that I can pause the video. That comes in handy for example when I want to copy a complex chemical structure formula while he is explaining that formula. (IVR1)

I’m glad I can stop and rewind the video, take notes, and if needed, rewind again. (IVR8)

I often watch a recording at about 1.4 or 1.6 times normal speed to speed things up. (IVR14)

**Relationship between use of recorded lectures and other resources available to the student**

The survey asked students to rate a number of other resources on their effectiveness in helping them to succeed for the course. The resources were scored on a six-point scale: “did not use”, “very ineffective”, “somewhat ineffective”, “neutral”, “somewhat effective”, and “very effective”. Table 8 shows that the other course resources, the lecture recordings and the face-to-face lectures score high for Fontys students. And though they score lower for the TU/e students, the reported order of effectiveness is equal to the one reported by Fontys students.

We used Spearman’s Rank Order correlation to investigate relationships between these answers and the number of times that students reported to have used the recorded lectures. Students who rank the online virtual learning environment as more effective tend to use recorded lectures more \( (r_s = 0.388, n = 513, p < 0.0005) \). A weak positive relationship was found between attending fewer live lectures and the use of recorded lectures \( (r_s = 0.239, n = 513, p < 0.0005) \). Of the students who never used recorded lectures, 66.1% said they always or almost always attended lectures in person. For students that used recorded lectures more than 10 times, that percentage is only 40.0%.

When asked the reasons for not attending face-to-face lectures, only 6.8% of the Fontys students and 14.3% of the TU/e students indicated that they prefer recordings over attending the lecture. Table 9 shows that more Fontys students (44.7%, \( n = 46 \))

Table 8. Indicated effectiveness in helping to succeed in the course.

<table>
<thead>
<tr>
<th>Somewhat or very effective</th>
<th>Fontys ( (n = 103) ) (%)</th>
<th>TU/e ( (n = 414) ) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other course resources (slides, lecture notes, etc.)</td>
<td>93.2</td>
<td>74.6</td>
</tr>
<tr>
<td>Lecture recordings</td>
<td>90.3</td>
<td>66.5</td>
</tr>
<tr>
<td>Attending face-to-face lectures</td>
<td>81.5</td>
<td>66.6</td>
</tr>
<tr>
<td>Online Virtual Learning Environment</td>
<td>74.8</td>
<td>49.3</td>
</tr>
<tr>
<td>Other Students</td>
<td>35.9</td>
<td>48.1</td>
</tr>
<tr>
<td>Going to professor or teachers assistant office hours</td>
<td>30.0</td>
<td>29.9</td>
</tr>
</tbody>
</table>
than TU/e students (29.3%, \(n = 103\)) report to have attended all the lectures for the course. Examples of other study-related activities given by students included project activities or other lectures/courses at the same time as the lecture in question.

A number of students commented that they did not think the lecturer minded that they were not present as long as there was a big enough group of students that did attend the lecture. One student of the Chemical Biology course said during the interview:

The lecturer does not mind it if students are not always present. He always has a group of about 70 students that attend the lecture. So nobody really notices it when you’re not there. (IVR1)

Another student, from the Methods and models in behavioural research course, thought that some lecturers preferred smaller groups:

Some lecturers have problems with keeping order in large groups or get nervous if a lot of students talk during the lecture. Now, only the students that are motivated are there and the rest watches the recordings. (IVR5)

**Discussion**

Students use recorded lectures as a replacement for missed lectures, either incidentally or as a structural replacement for lectures. They also use them for specific purposes, such as exam preparation, reviewing of material before a lecture or to improve the retention of lecture materials. This conforms with the findings of Traphagan (2006), Veeramani and Bradly (2008) and Gosper *et al.* (2008).

A large number of students report that they view most of the recorded lectures. This is consistent with Gosper *et al.* (2008) who, based on a sample of 815 students, reported that 71% of the respondents stated that they listened to the entire recording. It is, however, higher than Traphagan (2006) where only 46% or respondents out of a group of 488 said they watched the complete recordings.

The results show interesting differences in use between students from Fontys and TU/e. The Fontys students use the recorded lectures more than the TU/e students for activities such as managing distractions during lectures, checking their notes, reinforcing the experiences obtained at the live lecture and reviewing material before and after a lecture. These differences can be caused by differences in previous experience (or lack thereof) with recorded lectures, differences in gender, contents of the actual recorded lectures, course or department. Additional research is needed to determine the extent of the effect of each of these possible influencers.

---

**Table 9. Reasons to not attend one or more live lectures.**

<table>
<thead>
<tr>
<th>Reason</th>
<th>Fontys ((n = 46)) (%)</th>
<th>TU/e ((n = 103)) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attended all the lectures for this course</td>
<td>44.7</td>
<td>29.3</td>
</tr>
<tr>
<td>Travel distance</td>
<td>11.7</td>
<td>18.4</td>
</tr>
<tr>
<td>Disabilities and/or medical conditions</td>
<td>13.6</td>
<td>7.5</td>
</tr>
<tr>
<td>Work commitment</td>
<td>5.8</td>
<td>15.9</td>
</tr>
<tr>
<td>I prefer the recorded lecture over attending the lecture</td>
<td>6.8</td>
<td>14.3</td>
</tr>
<tr>
<td>Other study-related activities</td>
<td>3.0</td>
<td>15.7</td>
</tr>
<tr>
<td>I prefer not to attend lectures</td>
<td>1.0</td>
<td>7.5</td>
</tr>
</tbody>
</table>

*P. Gorissen et al.*
Their reported interest in the topic of the course, the indicated importance of that topic for their study and the grade that students aim for does not appear to influence the number of times that students use the recorded lectures.

In the interviews, even when prompted, students never mentioned quality of the lecture or lack thereof as decisive for watching or not watching a recorded lecture. Practical considerations like already having attended the lecture live or lack of time were much more important. There is a tendency that the recorded lectures for courses that only use the blackboard are viewed less often. This confirms the findings by Traphagan (2006) that while some students are tempted to skip class because of recorded lectures, other factors affect attendance as much or more than the availability of recorded lectures does.

This research does not question the length, structure or contents of the lectures that are being recorded, even though those might merit reconsideration. Our goal was to research the use of recorded lectures in their current setting.

The collected data is based on verbal reports, in this case by students, of their use of recorded lectures. Surveys are prone to a number of errors (Deming 1944). Methodological triangulation (Denzin 2006) increases the credibility and validity of the results provided by the surveys. Research by Sheard et al. (2003) shows it is possible to infer student learning behaviour from their interaction with the system. The LCS used at Fontys and TU/e keeps a log of the students’ interactions with the recorded lectures. This data can also be used to get a more detailed view of the students’ navigation within the recorded lectures.

Conclusions
The goal of this study was to get a better understanding of how students use the recorded lectures available at this moment. This is a first step towards the aim to improve the support for recorded lectures within different usage scenarios. Indeed, our study shows that different usage scenarios may apply. Students use recorded lectures to serve different purposes, such as replacement for lectures, exam preparation and reviewing material. Students of Higher Vocational Education seem to use recorded lectures more often than University students to check their understanding of a lecture they visited. We could not identify a relation between usage of recorded lectures and their quality or the importance of the topics covered.

Students know where to find the recordings and technical difficulties are seldom a reason not to watch the recorded lectures. Most technical problems occur when students view the recorded lectures from home.

In the next stage of the research, we will use the LCS logs to further study the above mentioned student usage scenarios for recorded lectures in a more quantitative way. This will enable us to better guide them to those parts of the lectures that they want to view given their intended purpose of use of the recorded lecture.

Acknowledgements
This research has been funded by Fontys University of Applied Sciences. The authors would like to thank the Student Office of TU/e and the School of Nursing for their assistance in this survey.
References


Wieling, M. (2008) *De effecten van het aanbieden van videocolleges als aanvulling op de reguliere hoorcolleges binnen de Faculteit Rechten* [The effects of recorded lectures as a supplement to regular lectures at the Law department]. Groningen University, Groningen.


Media Streaming Project Proposal

The use of video and audio content, delivered through a variety of channels, is increasingly important to the University of Dundee. Digital media is becoming more intensively utilised in learning and teaching, the communication of research, and for support and guidance purposes. Schools are increasingly seeing staff creating video content, while distance learning initiatives have high expectations of delivering content via video, with a desire to release material openly for external relation and promotion purposes.

A prioritisation of service needs exercise run by the LLC through the eLearning Sub-Committee in August 2011 showed demand for media streaming and support for use of video in teaching. However, since that date the only progress made towards realising those aspirations has been the development of policy and guidelines on the use of audio and video material by staff and students. The University continues to lack the fundamental infrastructure required for video storage and effective dissemination.

The key issues identified then, and which remain relevant, were:

- Lack of infrastructure available for academic staff to support their use of video content.
- Video content is often duplicated, in numerous formats, to try to make it accessible.
- The need to create procedures to retrospectively manage stray video content.
- Currently no institutional audit or approach to quality control for video release.
- Currently no model in place to support the pedagogic use of a central system.

An updated project scoping and analysis of available solutions is currently underway, however, it is evident that any approach in this area will require significant and ongoing investment in addition to the staff effort which will be needed to support the system and deliver staff training.

This paper outlines a proposed roadmap to develop appropriately resourced and supported media streaming, that is both sustainable and scalable, across the institution.

Library & Learning Centre, February 2013
## Proposed Roadmap

<table>
<thead>
<tr>
<th>No.</th>
<th>Action</th>
<th>Timeframe</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td><strong>Submission</strong> for budgetary approval towards the support of set up and first year costs for hosting and delivery of the service and additional staff effort</td>
<td>February 2013</td>
<td>Submitted in LLC operational plan</td>
</tr>
<tr>
<td>2.</td>
<td>Updated project scoping and analysis of available solutions</td>
<td>February – March 2013</td>
<td>Completed previously, under revision due to time lapse</td>
</tr>
<tr>
<td>3.</td>
<td>Policy and guidelines on the use of audio and video material by staff and students under development by Disability Services, LLC &amp; LPGA</td>
<td>March 2013</td>
<td>Submitted for approval to LTC</td>
</tr>
<tr>
<td>4.</td>
<td><strong>Confirmation</strong> of budgetary approval</td>
<td>June – July 2013</td>
<td>Submitted for approval</td>
</tr>
<tr>
<td>5.</td>
<td>Software licencing</td>
<td>August 2013</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Integration of software with existing systems</td>
<td>Aug - Sep 2013</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Audit locally/externally held video content</td>
<td>Aug - Nov 2013</td>
<td>Planned</td>
</tr>
<tr>
<td>8.</td>
<td>Service deployment, pilot and testing</td>
<td>Sep – Dec 2013</td>
<td>Planned</td>
</tr>
<tr>
<td>9.</td>
<td>Training sessions to be developed and added to LLC inspirED professional development programme for academic year 2013-14</td>
<td>Nov 2013 – April 2014</td>
<td>Planned</td>
</tr>
<tr>
<td>10.</td>
<td>Phased rollout of service</td>
<td>January 2014 - ongoing</td>
<td>Planned</td>
</tr>
<tr>
<td>11.</td>
<td>Review of project and planning for next steps, summary to be presented to committees as appropriate</td>
<td>From January 2014</td>
<td>Planned</td>
</tr>
<tr>
<td>12.</td>
<td>Requirement for service/next steps to be highlighted in School and LLC operational plans and budget processes</td>
<td>Jan-May 2014</td>
<td>Part of University annual planning cycle</td>
</tr>
</tbody>
</table>
Welcome and Introduction

The e-Learning Forum will meet on a regular basis to allow for sharing of ideas and approaches with a strong focus on practice and pedagogy rather than formal policy. A fairly informal agenda will be prepared for each meeting with time set aside for members to raise issues or to share items of interest.

The meetings will, as far as possible, be timed so that issues can be fed into the business of the formal Sub-Committee if necessary.

The Forum is open to all staff with an interest in e-learning and suggestions for topics or ideas for discussion or questions to be raised are very welcome.

Stuart Cross, Convener

Strategic Aims & Objectives

The first meeting of the revived Forum took place on 11 December and was well attended by staff from across campus. The main item for discussion was the relevant elements of the University’s Learning & Teaching Strategy.

Members argued that this could only be achieved if there were investment and resources to allow for evidence-based adoption of cutting edge approaches in e-learning.

“The we will create a sustainable learning environment which exploits all the appropriate approaches and technologies, maximizes income and ensures that our students, in Dundee and elsewhere, are supported for success.”

Aim 5 of the University’s Learning & Teaching Strategy

The Forum took the opportunity to consider how best to link these strategic imperatives and objectives with annual operating plans being developed in each School.

The Forum expressed a strong view that innovation needed to be encouraged for the long term – in the light the aim of the University Vision to become Scotland’s leading university.

Members were urged to engage with colleagues at School level to specify the resources that will be needed to help meet the strategic aims.

The case for dedicated local resources and for central LLC support needed to be put before Deans and senior managers as they formulate the School operational plans in the very near future.
Smaller groups were formed to discuss the draft Strategic Aims document - as well as the role of the Forum in shaping strategy and influencing School operational plans.

The role of the Forum:
- Improving lines of communication;
- Sharing ideas and best practice;
- Making the case for investment in an expert central support service;
- Engaging with the non-enthusiasts;
- Providing evidence of effective practice across all disciplines.

The Forum will meet in January, April, August and October as part of the University Calendar and at other times as required.

Recording lectures as podcasts.

Making the most of student contact time?

Murray Frame, School of Humanities, explained that the recent approval of the policy on students recording lectures had led him to re-evaluate the best way to deliver teaching and contact time.

If students are able to record lectures then perhaps these lectures should be provided, in the form of podcasts, online and possibly downloadable – leaving contact time for seminars and other learning opportunities.

The Forum discussed this idea – both in principle and in terms of the best technical solutions available: Camtasia and Articulate were suggested.

Advice was given that the amount of time that it takes to produce a podcast recording should not be underestimated - students will be concerned about the quality of content as well as editorial and production quality.

Good examples of where this approach had worked well – in Medical Education and in Life Sciences – were discussed and LLC advice and support were offered.

The Dundee e-Learning Blog will be re-launched in January 2013 – all Forum members will be encouraged to submit to the blog.

Please email m.glover@dundee.ac.uk if you wish to be added to the Forum mailing list.